

Geometry Honors

Midterm Review

Geometry Honors Midterm Review**Multiple Choice**

Identify the choice that best completes the statement or answers the question.

- 1** What is the contrapositive of the statement below?

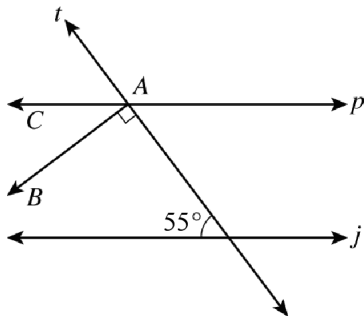
“If you live in Tallahassee, then you live in Florida.”

- (A) If you do not live in Florida, then you do not live in Tallahassee.
- (B) If you do not live in Florida, then you live in Tallahassee.
- (C) If you do not live in Tallahassee, then you do not live in Florida.
- (D) If you live in Florida, then you live in Tallahassee.

- 2** \overline{CD} has endpoints $C(5, 3)$ and $D(-8, 9)$. To the nearest tenth, what is the distance, in units, from point C to the midpoint of the segment?

- (F) 6.8
- (G) 7.2
- (H) 7.7
- (J) 8.0

- 3** In this drawing, line p is parallel to line j and line t is perpendicular to \overrightarrow{AB} .



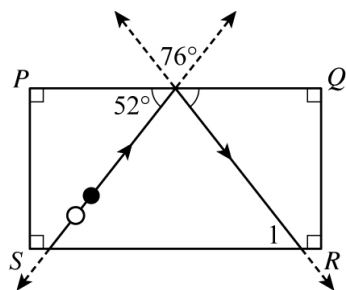
What is the measure of $\angle BAC$?

- (A) 25°
- (B) 35°
- (C) 90°
- (D) 125°

Name: _____

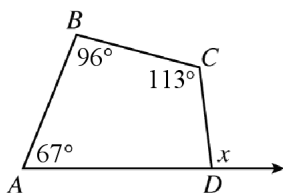
ID: A

- 4** Alejandra is playing pool. The path of the ball is shown in the diagram below.



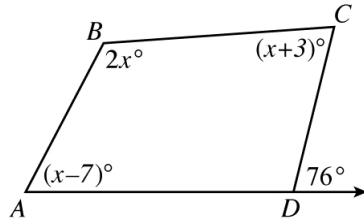
What is the measure of $\angle 1$?

- (F) 52°
 - (G) 76°
 - (H) 104°
 - (J) 128°
- 5** Three angles of quadrilateral $ABCD$ have measures 67° , 96° , and 113° . What is the value of x ?

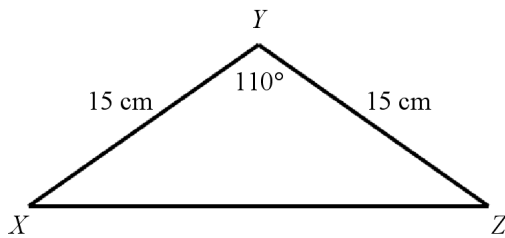


- (A) 276°
- (B) 114°
- (C) 96°
- (D) 84°

- 6 In the quadrilateral below, what is the measure of one of the interior angles?

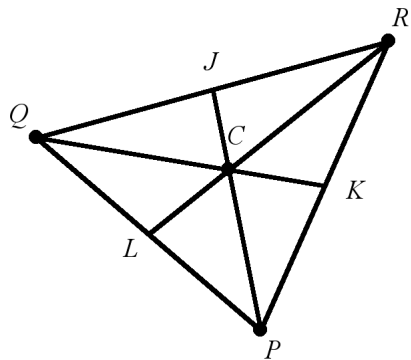


- (F) 65°
(G) 68°
(H) 72°
(J) 75°
- 7 How are the angle of a triangle and the exterior angle of the triangle at the vertex related?
- (A) They are complementary angles.
(B) They are supplementary angles.
(C) They are congruent angles.
(D) They are vertical angles.
- 8 Classify triangle XYZ according to its angle measures and side lengths.



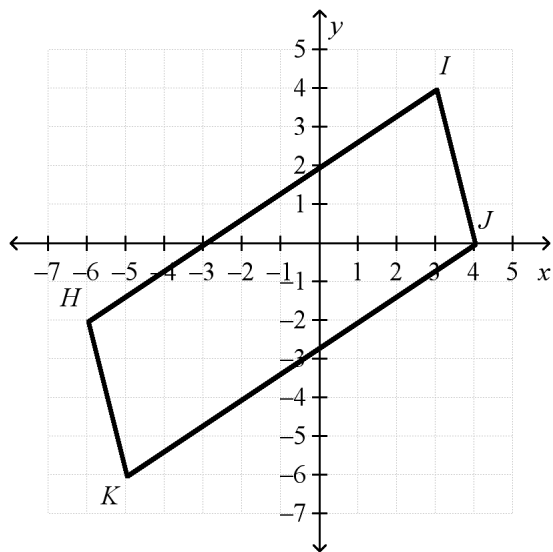
- (F) acute, equilateral
(G) acute, isosceles
(H) obtuse, scalene
(J) obtuse, isosceles

- 9** Point C is the centroid of triangle PQR below. If $RL = 15$, what is CL ?



- (A) 5
(B) 6.5
(C) 7.5
(D) 10
- 10** Parallelogram $LMNO$ has vertices $L(8, -6)$, $M(-3, -9)$, $N(-6, 2)$, and $O(5, 5)$. Which of the following classification(s) apply to $LMNO$? Identify all that apply.
- (F) square and rectangle
(G) rectangle
(H) square and rhombus
(J) square, rectangle, and rhombus

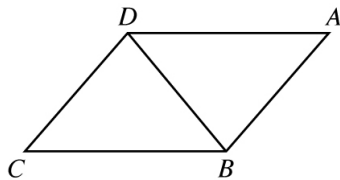
- 11** Quadrilateral $HIJK$ has the vertices shown below.



Which of the following would NOT be sufficient to show that $HIJK$ is a parallelogram?

- (A) \overline{HK} and \overline{IJ} have the same slope, and \overline{HI} and \overline{JK} have the same slope.
- (B) $HK = IJ$ and $HI = JK$.
- (C) $HJ = IK$
- (D) \overline{HK} and \overline{IJ} have the same slope, and $HK = IJ$.

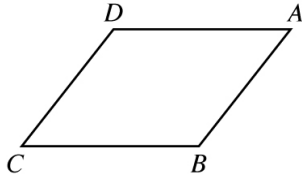
- 12** In the proof below, which triangle congruence property is used to show that opposite sides of a parallelogram are congruent?



Statement	Reason
1. $\overline{AD} \parallel \overline{BC}$ and $\overline{AB} \parallel \overline{DC}$	1. Definition of a parallelogram.
2. $\angle ABD \cong \angle BDC$ and $\angle DBC \cong \angle ADB$	2. Alternate interior angles formed by parallel lines and a transversal are congruent.
3. $\overline{BD} \cong \overline{BD}$	3. Reflexive Property of Congruence
4. $\triangle ADB \cong \triangle CBD$	4. ?
5. $\overline{AD} \cong \overline{BC}$ and $\overline{AB} \cong \overline{DC}$	5. CPCTC

- Ⓕ AAS
 Ⓖ ASA
 Ⓗ SAS
 Ⓙ SSS

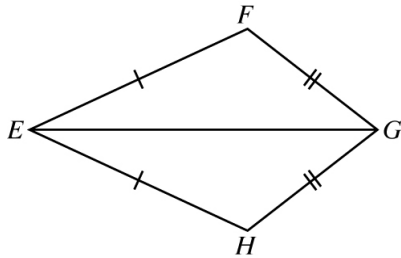
- 13** In the proof below, which property about parallelograms is being proved?



Statement	Reason
1. $\overline{AD} \parallel \overline{BC}$ and $\overline{AB} \parallel \overline{DC}$	1. Definition of a parallelogram
2. $m\angle A + m\angle B = 180$ $m\angle D + m\angle C = 180$	2. Same-side interior angles are supplementary.
3. $m\angle A + m\angle D = 180$ $m\angle B + m\angle C = 180$	3. Same-side interior angles are supplementary.
4. $m\angle B + m\angle C = m\angle A + m\angle B$	4. Substitution property of equality
5. $m\angle C = m\angle A$	5. Subtraction property of equality
6. $m\angle D + m\angle C = m\angle B + m\angle C$	6. Substitution property of equality
7. $m\angle D = m\angle B$	7. Subtraction property of equality
8. $\angle C \cong \angle A, \angle D \cong \angle B$	8. Definition of congruent angles

- Ⓐ Consecutive angles are supplementary.
 Ⓑ Diagonals of a parallelogram bisect each other.
 Ⓒ Opposite angles are congruent.
 Ⓓ Opposite sides are congruent.

- 14** In the proof below, which statement about kite $EFGH$ is being proved?



Statement	Reason
1. $\overline{EF} \cong \overline{EH}$ and $\overline{FG} \cong \overline{HG}$	1. Definition of kite
2. $\overline{EG} \cong \overline{EG}$	2. Reflexive Property of congruence
3. $\triangle EFG \cong \triangle EHG$	3. SSS
4. ?	4. CPCTC

- Ⓕ $\angle E \cong \angle G$
 Ⓖ $\angle E \cong \angle F$
 Ⓗ $\angle F \cong \angle G$
 Ⓙ $\angle F \cong \angle H$

- 15** Quadrilateral $RSTU$ has exactly one pair of congruent opposite angles. Which type of quadrilateral could $RSTU$ be?

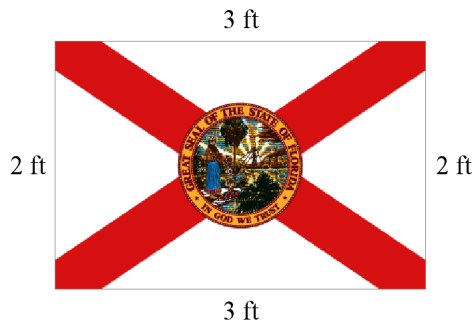
- Ⓐ kite
 Ⓑ rectangle
 Ⓒ trapezoid
 Ⓓ parallelogram

- 16** In quadrilateral $LMNO$, \overline{LN} and \overline{MO} are congruent. Which type of quadrilateral could $LMNO$ NOT be?

- Ⓕ rectangle
 Ⓖ kite
 Ⓗ square
 Ⓙ rhombus

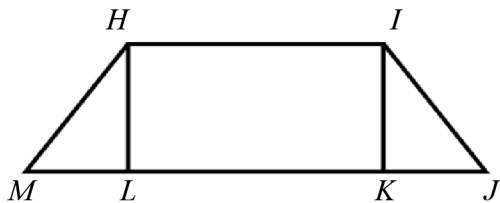
- 17** If a quadrilateral has exactly two pairs of consecutive angles that are supplementary, which type of quadrilateral is it?
- (A) rhombus
 - (B) parallelogram
 - (C) trapezoid
 - (D) kite
- 18** Which of the following is not necessarily a property of a parallelogram?
- (F) Both pairs of opposite sides are parallel.
 - (G) Both pairs of opposite sides are congruent.
 - (H) Diagonals are congruent.
 - (J) Diagonals bisect each other.
- 19** Which of the following is not necessarily a property of a rhombus?
- (A) All sides are congruent.
 - (B) All angles are congruent.
 - (C) Diagonals are perpendicular.
 - (D) Diagonals bisect each other.
- 20** Which of the following statements is true?
- (F) All parallelograms are rhombi.
 - (G) All rhombi are squares.
 - (H) All rectangles are squares.
 - (J) All squares are rectangles.

- 21** The Florida state flag in Mr. Wesson's homeroom has four right angles and the dimensions shown below.



Which of the following is the best classification for the shape of the flag?

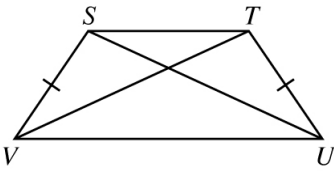
- (A) parallelogram
 - (B) rhombus
 - (C) square
 - (D) rectangle
- 22** Which of the following is NOT a method for proving triangle congruence?
- (F) SSS Congruence
 - (G) SAS Congruence
 - (H) AAS Congruence
 - (J) SSA Congruence
- 23** Given: $\overline{LM} \cong \overline{KJ}$.



Which additional piece of information would be sufficient to prove that triangles HLM and IKJ are congruent?

- (A) $HIKL$ is a parallelogram.
- (B) $HIKL$ is a rectangle.
- (C) $\overline{HM} \cong \overline{IJ}$
- (D) $\angle HLM \cong \angle IJK$

- 24** Given: $STUV$ is an isosceles trapezoid.
Prove: $\overline{SU} \cong \overline{TV}$

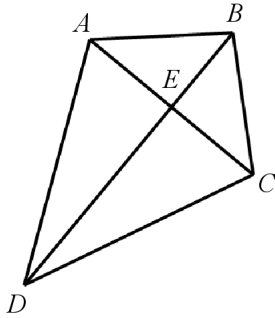


What is the missing reason in step 2?

Statement	Reason
1. $\overline{SV} \cong \overline{TU}$	1. Legs of an isosceles trapezoid are congruent.
2. $\angle SVU \cong \angle TUV$	2. ?
3. $\overline{VU} \cong \overline{UV}$	3. Reflexive Property of Congruence
4. $\triangle SVU \cong \triangle TUV$	4. SAS
5. $\overline{SU} \cong \overline{TV}$	5. CPCTC

- Ⓕ CPCTC
 Ⓖ Base angles of a trapezoid are supplementary.
 Ⓗ Symmetric Property of Congruence
 Ⓙ Base angles of an isosceles triangle are congruent.

- 25** Given: $ABCD$ is a kite.
Prove: $\triangle ABE \cong \triangle CBE$



Which triangle congruence statement is missing in step 4?

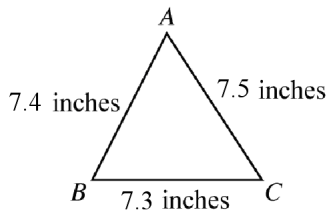
Statement	Reason
1. $ABCD$ is a kite.	1. Given
2. $\overline{AB} \cong \overline{BC}$; $\overline{AD} \cong \overline{CD}$	2. Definition of a kite
3. $\overline{BD} \cong \overline{BD}$	3. Reflexive Property of Congruence
4. ?	4. SSS
5. $\angle ABE \cong \angle CBE$	5. CPCTC
6. $\overline{BE} \cong \overline{BE}$	6. Reflexive Property of Congruence
7. $\triangle ABE \cong \triangle CBE$	7. SAS

- (A) $\triangle AED \cong \triangle CED$
 (B) $\triangle ADB \cong \triangle CBE$
 (C) $\triangle ABD \cong \triangle CBD$
 (D) $\triangle ABE \cong \triangle CBE$

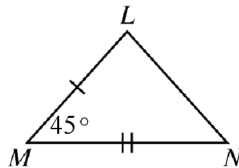
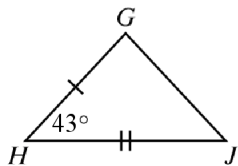
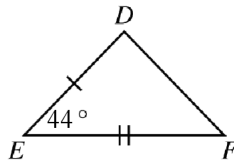
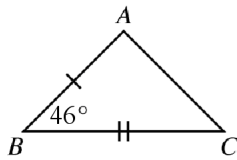
- 26** Which group of segment lengths can be used to form a triangle?

- (F) 6, 8, 14
 (G) 5, 9, 12
 (H) 3, 6, 15
 (J) 2, 4, 7

- 27** In triangle ABC below, which angle has the greatest measure?



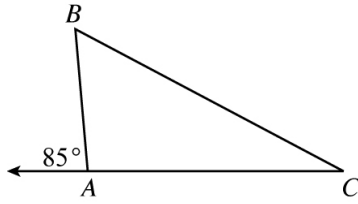
- (A) $\angle A$
(B) $\angle B$
(C) $\angle C$
(D) All three angles have the same measure.
- 28** In each of the triangles below, two of the sides are congruent to corresponding sides in the other triangles. The included angles are all different. Which triangle has the greatest perimeter?



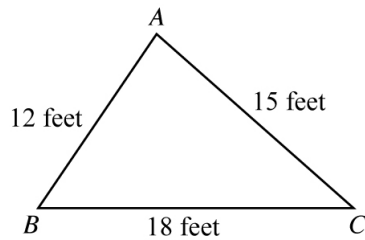
- (F) triangle ABC
(G) triangle DEF
(H) triangle GHJ
(J) triangle LMN
- 29** Two sides of a triangle are 5 inches and 9 inches. Which can be the length of the third side?

- (A) 3.8 inches
(B) 5.2 inches
(C) 14.1 inches
(D) 16.5 inches

- 30** Which statement is true about $\angle B$ in triangle ABC below?

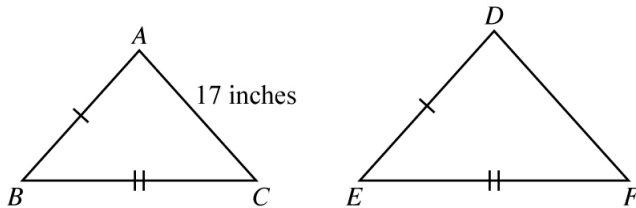


- Ⓕ $m\angle B = 85^\circ$
 Ⓖ $m\angle B < 85^\circ$
 Ⓗ $m\angle B > 85^\circ$
 Ⓙ $m\angle B = 95^\circ$
- 31** Triangle ABC shows the lengths of the three sides. Which expression gives the greatest value?



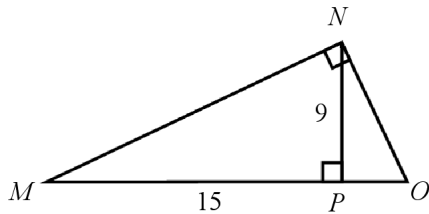
- Ⓐ $m\angle A + m\angle B$
 Ⓑ $m\angle A + m\angle C$
 Ⓒ $m\angle B + m\angle C$
 Ⓓ $\frac{3}{4}m\angle A$

- 32** In triangles ABC and DEF below, $\overline{AB} \cong \overline{DE}$ and $\overline{BC} \cong \overline{EF}$, but $\angle B$ is smaller than $\angle E$. Which could be the length of \overline{DF} ?



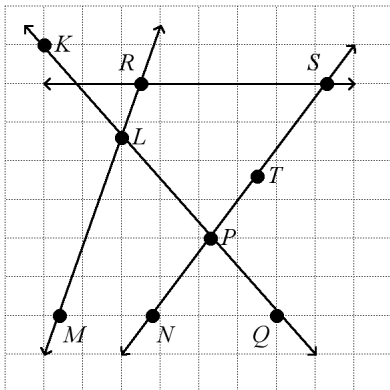
- Ⓕ 15 inches
 Ⓖ 16 inches
 Ⓗ 17 inches
 Ⓙ 18 inches

- 33** In the figure below, \overline{NP} is the altitude drawn to the hypotenuse of $\triangle MNO$.



If $NP = 9$ and $MP = 15$, what is the length of \overline{OP} ?

- (A) 7.2
 (B) 6.2
 (C) 5.4
 (D) 4.8
- 34** Tracy cut out a piece of construction paper in the shape of a rhombus. Which of the following statements is a conjecture she CANNOT make about the paper?
- (F) The sides of the paper have the same length.
 (G) The diagonals of the paper bisect each other.
 (H) The diagonals of the paper have the same length.
 (J) The diagonals of the paper are perpendicular.
- 35** Name three points that are collinear.



- (A) M, L, R
 (B) L, P, T
 (C) Q, L, M
 (D) R, S, K

- 36** Find the value b and length GH , given H is between G and I .

$$GI = 5b + 1, HI = 4b - 5, HI = 7$$

- (F) $b = 1.2, GH = 6.8$ (H) $b = 3, GH = 9$
(G) $b = 1.22, GH = 7.11$ (J) $b = 3, GH = 16$

\overleftrightarrow{WX} and \overleftrightarrow{YZ}
Determine whether \overleftrightarrow{WX} and \overleftrightarrow{YZ} are parallel, perpendicular, or neither.

- 37** $W(-2, -1), X(4, 1), Y(1, -4), Z(5, -4)$

- (A) perpendicular
(B) parallel
(C) neither

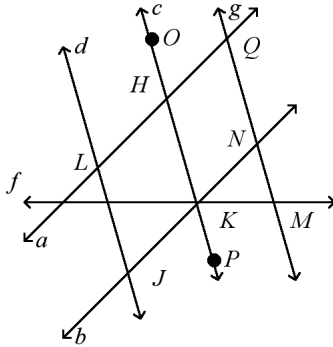
Write an equation in point-slope form of the line having the given slope that contains the given point.

- 38** $m = -\frac{2}{3}, \left(\frac{15}{4}, -\frac{1}{2}\right)$

- (F) $y + \frac{1}{2} = -\frac{2}{3}\left(x - \frac{15}{4}\right)$ (H) $y + \frac{1}{2} = -\frac{2}{3}\left(x + \frac{15}{4}\right)$
(G) $y - \frac{15}{4} = -\frac{2}{3}\left(x + \frac{1}{2}\right)$ (J) $y = -\frac{2}{3}x + \frac{41}{12}$

Given the following information, determine which lines, if any, are parallel. State the postulate or theorem that justifies your answer.

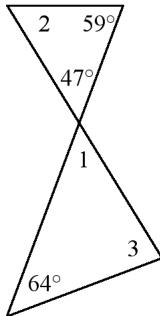
39 $\angle LHO \cong \angle NKP$



- (A) $c \parallel d$; congruent corresponding angles
- (B) $a \parallel b$; congruent corresponding angles
- (C) $a \parallel b$; congruent alternate exterior angles
- (D) $c \parallel d$; congruent alternate exterior angles

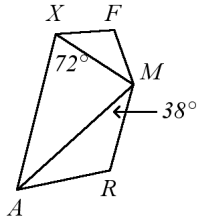
Find each measure.

40 $m\angle 1$, $m\angle 2$, $m\angle 3$



- (F) $m\angle 1 = 64$, $m\angle 2 = 74$, $m\angle 3 = 52$
- (G) $m\angle 1 = 64$, $m\angle 2 = 47$, $m\angle 3 = 52$
- (H) $m\angle 1 = 47$, $m\angle 2 = 74$, $m\angle 3 = 69$
- (J) $m\angle 1 = 47$, $m\angle 2 = 59$, $m\angle 3 = 64$

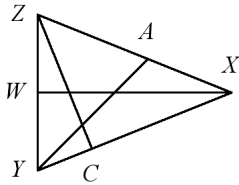
Use the figure below to answer question 43. $\triangle ARM$, $\triangle MAX$, and $\triangle XFM$ are all isosceles triangles.



- 41** If $m\angle FXA = 96$, what is $m\angle FMR$?

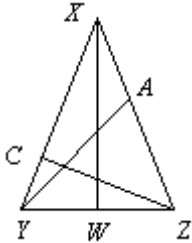
(A) 96 (C) 152
(B) 134 (D) 138

- 42** \overline{ZC} is an altitude, $\angle CYW = 9x + 38$, and $\angle WZC = 17x$. Find $m\angle WZC$.



(F) 34 (H) 18
(G) 32 (J) 31

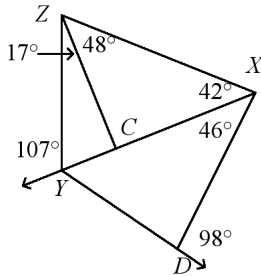
- 43** \overline{XW} is an angle bisector, $\angle YXZ = 7x + 39$, $\angle WXY = 10x - 13$, and $\angle XZY = 10x$. Find $m\angle WZX$. Is \overline{XW} an altitude?



(A) 50; no (C) 50; yes
(B) 32; yes (D) 32; no

Determine the relationship between the lengths of the given sides.

44 \overline{ZX} , \overline{YX}



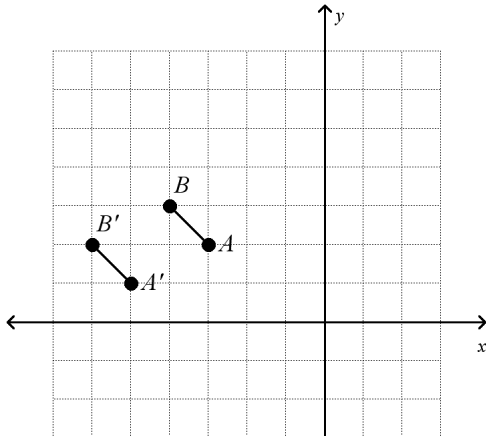
- (F) $\overline{ZX} < \overline{YX}$
 (G) $\overline{ZX} = \overline{YX}$

(H) $\overline{ZX} > \overline{YX}$

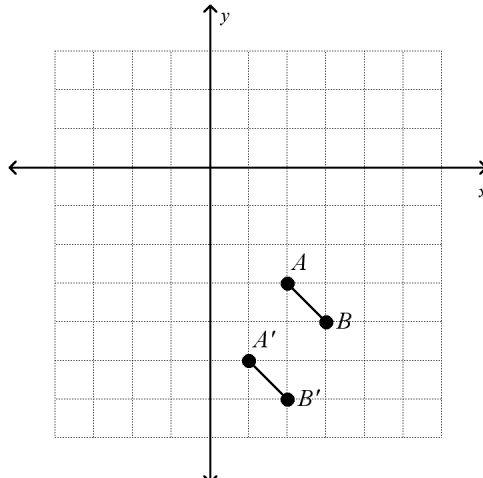
Graph each figure and its image under the given translation.

45 \overline{AB} with endpoints $A(-3, 2)$ and $B(-4, 3)$ under the translation left two units and down one unit

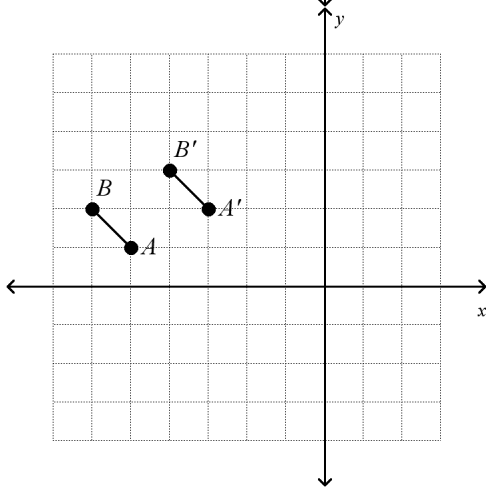
(A)



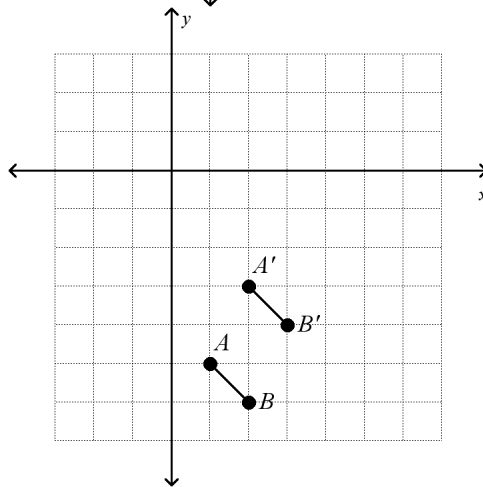
(C)



(B)

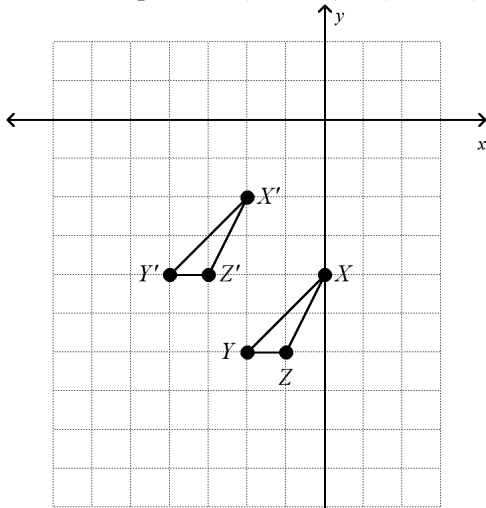


(D)

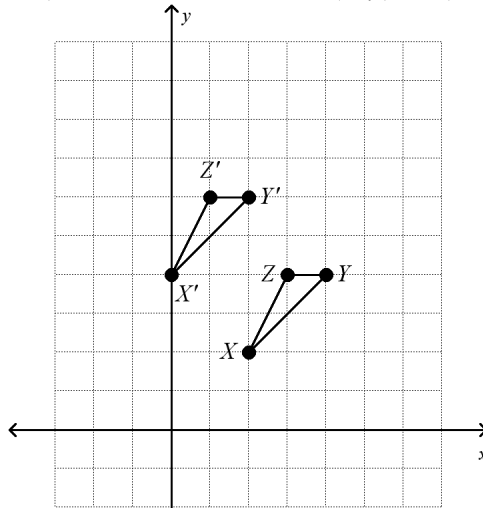


- 46** $\triangle XYZ$ with endpoints $X(-2, -2)$, $Y(-4, -4)$, $Z(-3, -4)$ under the translation $(x, y) \rightarrow (x + 2, y - 2)$

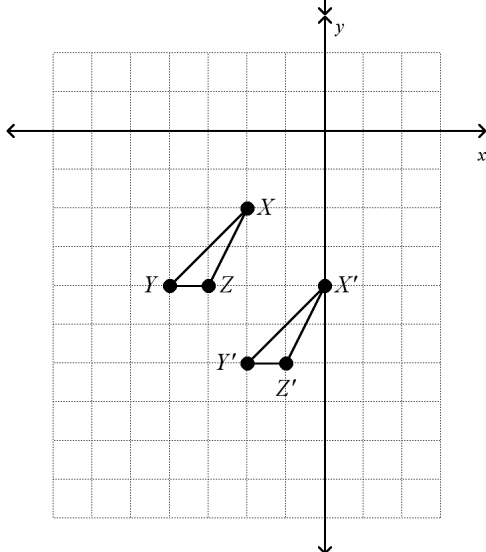
(F)



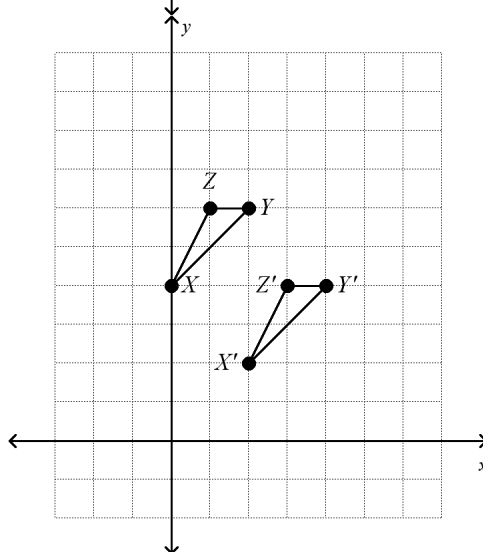
(H)



(G)



(J)



- 47** How do you write the inverse of the conditional statement below?

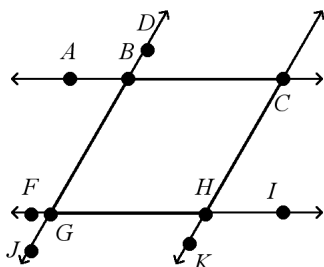
“If $m\angle 1 = 60^\circ$, then $\angle 1$ is acute.”

- (A) If $m\angle 1 = 60^\circ$, then $\angle 1$ is not acute.
- (B) If $\angle 1$ is not acute, then $m\angle 1 \neq 60^\circ$.
- (C) If $\angle 1$ is acute, then $m\angle 1 = 60^\circ$.
- (D) If $m\angle 1 \neq 60^\circ$, then $\angle 1$ is not acute.

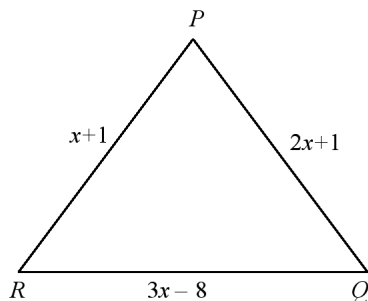
Short Answer

Write a two-column proof of the theorem.

- 48** If $m\angle GBC + m\angle HGB = 180$, then $\overleftrightarrow{FH} \parallel \overleftrightarrow{AC}$.

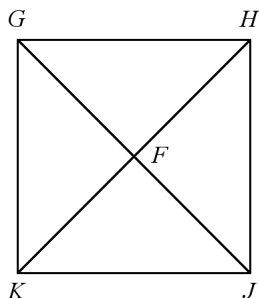


- 49** Find x , PQ , QR , and RP if $\triangle PQR$ is an isosceles triangle with $\overline{PQ} \cong \overline{QR}$.



Write a two-column proof.

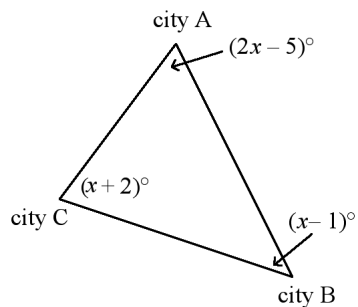
- 50** **Given:** Square $GHJK$
Prove: $\triangle GHK \cong \triangle JKH$



Name: _____

ID: A

- 51** A salesperson travels from city A to city B and then to city C. From city C, the salesperson travels directly back to city A as shown in the diagram below. Write the lengths of the legs of the trip in order from least to greatest.



- 52** In a botanical garden, a regular octagonal greenhouse was designed especially for orchids. Find the sum of the measures of the interior angles and an exterior angle of the greenhouse.

Geometry Honors Midterm Review

Answer Section

MULTIPLE CHOICE

1	ANS: A	STA: MA.912.D.6.2
2	ANS: G	STA: MA.912.G.1.1
3	ANS: B	STA: MA.912.G.1.3
4	ANS: F	STA: MA.912.G.1.3
5	ANS: C	STA: MA.912.G.2.2
6	ANS: G	STA: MA.912.G.2.2
7	ANS: B	STA: MA.912.G.2.2
8	ANS: J	STA: MA.912.G.4.1
9	ANS: A	STA: MA.912.G.4.2
10	ANS: J	STA: MA.912.G.3.3
11	ANS: C	STA: MA.912.G.3.3
12	ANS: G	STA: MA.912.D.6.4 MA.912.G.3.4 MA.912.G.8.5
13	ANS: C	STA: MA.912.D.6.4 MA.912.G.3.4 MA.912.G.8.5
14	ANS: J	STA: MA.912.D.6.4 MA.912.G.3.4 MA.912.G.8.5
15	ANS: A	STA: MA.912.G.3.2
16	ANS: G	STA: MA.912.G.3.2
17	ANS: C	STA: MA.912.G.3.2
18	ANS: H	STA: MA.912.G.3.2
19	ANS: B	STA: MA.912.G.3.2
20	ANS: J	STA: MA.912.G.3.1
21	ANS: D	STA: MA.912.G.3.1
22	ANS: J	STA: MA.912.G.4.6
23	ANS: B	STA: MA.912.G.4.6 MA.912.G.8.5
24	ANS: J	STA: MA.912.D.6.4 MA.912.G.4.6 MA.912.G.8.5
25	ANS: C	STA: MA.912.D.6.4 MA.912.G.4.6 MA.912.G.8.5
26	ANS: G	STA: MA.912.G.6.5
27	ANS: B	STA: MA.912.G.6.5
28	ANS: F	STA: MA.912.G.6.5
29	ANS: B	STA: MA.912.G.6.5
30	ANS: G	STA: MA.912.G.6.5
31	ANS: A	STA: MA.912.G.6.5
32	ANS: J	STA: MA.912.G.6.5
33	ANS: C	STA: MA.912.G.5.2
34	ANS: H	STA: MA.912.G.8.4
35	ANS: A	STA: LA.1112.1.6.1 MA.912.G.8.1
36	ANS: H	STA: MA.912.G.1.2 MA.912.G.8.6
37	ANS: C	STA: MA.912.G.8.3

- 38** ANS: F STA: MA.912.G.8.2
39 ANS: C STA: MA.912.G.1.2
40 ANS: H STA: MA.912.G.2.2 | MA.912.G.8.5 | MA.912.D.6.4 | MA.912.G.8.2
41 ANS: B STA: LA.910.1.6.5 | MA.912.G.4.1
42 ANS: F STA: LA.1112.1.6.1 | MA.912.G.4.2
43 ANS: A STA: LA.1112.1.6.1 | MA.912.G.4.2
44 ANS: H STA: LA.910.1.6.5 | MA.912.G.4.7
45 ANS: A STA: MA.912.G.2.4 | MA.912.G.2.6
46 ANS: G STA: MA.912.G.2.4 | MA.912.G.2.6
47 ANS: D STA: MA.912.D.6.2

SHORT ANSWER

- 48** ANS:
 Sample:
Given: $m\angle GBC + m\angle HGB = 180$
Prove: $\overleftrightarrow{FH} \parallel \overleftrightarrow{AC}$

Proof:

Statements	Reasons
1. $m\angle GBC + m\angle HGB = 180$	1. Given
2. $\angle GBC$ and $\angle DBC$ are a linear pair.	2. Definition of linear pair
3. $m\angle GBC + m\angle DBC = 180$	3. The sum of the measures of a linear pair is 180.
4. $m\angle GBC + m\angle HGB = m\angle GBC + m\angle DBC$	4. Substitution Property
5. $m\angle HGB = m\angle DBC$	5. Subtraction Property
6. $\angle HGB \cong \angle DBC$	6. Definition of congruent angles
7. $\overleftrightarrow{FH} \parallel \overleftrightarrow{AC}$	7. If corresponding angles are congruent, then lines are parallel.

STA: MA.912.G.1.2

- 49** ANS:
 $x = 9$, $PQ = 19$, $QR = 19$, $RP = 10$

Use $2x + 1 = 3x - 8$ to find the value of x . Replace x to find the lengths of PQ , QR , and RP .

STA: MA.912.G.4.1 | MA.912.G.8.6

50

ANS:

Sample:

Given: Square $GHJK$ **Prove:** $\triangle GHK \cong \triangle JKH$ **Proof:**

Statements	Reasons
1. \overline{GHJK} is a square.	1. Given
2. $\overline{GK} \cong \overline{JH}$	2. Definition of a square
3. $\overline{GH} \cong \overline{JK}$	3. Definition of a square
4. $\overline{HK} \cong \overline{KH}$	4. Reflexive Property
5. $\triangle GHK \cong \triangle JKH$	5. SSS Postulate

STA: MA.912.G.4.6 | MA.912.G.4.8

51

ANS:

city C to city A, city A to city B, city B to city C

If one angle of a triangle has a greater measure than another angle, then the side opposite the greater angle is longer than the side opposite the lesser angle.

STA: LA.910.1.6.5 | MA.912.G.4.7

52

ANS:

1080, 45

To find the sum of the measures of the interior angles of a regular polygon, use the formula $180(n - 2)$.

To find the measure of each exterior angle of a regular polygon, use the formula $\frac{360}{n}$.

STA: MA.912.G.2.2 | MA.912.G.3.4